

Soil and Groundwater Management Contingency Plan

**Eureka City Schools Bus Yard
Eureka, California
Case No. 12649**

Prepared for:

Eureka City Schools



Consulting Engineers & Geologists, Inc.

**812 W. Wabash
Eureka, CA 95501-2138
707/441-8855**

**August 2005
098073.100**



CONSULTING ENGINEERS & GEOLOGISTS, INC.

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Reference: 098073.100

August 5, 2005

Mr. Bob Stone
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

**Subject: Soil and Groundwater Management Contingency Plan, Eureka City
Schools Bus Yard, Eureka, California; Case No. 12649**

Dear Mr. Stone:

SHN Consulting Engineers & Geologists, Inc. completed the attached Soil and Groundwater Management Contingency Plan (SGMCP) for the Eureka City Schools Bus Yard, located at 642 West 14th Street, in Eureka, California. This SGMCP is being submitted in response to the site closure letter from the Humboldt County Division of Environmental Health dated April 15, 2005.

If you have any questions, please contact me at 441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

A handwritten signature in black ink, appearing to read 'Erik J. Nielsen'.

Erik J. Nielsen, C.H.G.
Project Manager

MKF/EJN:med:lms

Enclosure: Report

copy w/encl: RWQCB

Bruce Slightom, Eureka City Schools

Reference: 098073.100

Soil and Groundwater Management Contingency Plan

**Eureka City Schools Bus Yard
Eureka, California
Case No. 12649**

Prepared for:

Eureka City Schools
624 West 14th Street
Eureka, CA 95542

Prepared by:



Consulting Engineers & Geologists, Inc.
812 W. Wabash
Eureka, CA 95501-2138
707/441-8855

August 2005



QA/QC:MKE__

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Abbreviations and Acronyms

<	denotes a value less than the laboratory detection limit
µg/g	micrograms per gram
µg/L	micrograms per Liter
°F	degrees Fahrenheit
ppm	parts per million
ACGIH	American Conference of Governmental Industrial Hygienists
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
CFR	Code of Federal Regulations
FID	Flame Ionization Detector
HCDEH	Humboldt County Division of Environmental Health
LEL	Lower Exposure Limit
MTBE	Methyl Tertiary-Butyl Ether
NIOSH	National Institute for Occupational Safety and Health
OSHA	(U.S.) Occupational Safety Health Administration
OVA	Organic Vapor Analyzer
PID	Photoionization Detector
PPE	Personal Protective Equipment
RWQCB	California Regional Water Quality Control Board, North Coast Region
SB-#	Soil Boring-#
SHN	SHN Consulting Engineers & Geologists, Inc.
SGMCP	Soil and Groundwater Management Contingency Plan
SSO	Site Safety Officer
SSP	Site Safety Plan
SSS	Site Safety Supervisor
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
TPHMO	Total Petroleum Hydrocarbons as Motor Oil
UEL	Upper Exposure Limit
UST	Underground Storage Tank
WP-#	Well Point-#

1.0 Introduction

1.1 Purpose

This Soil and Groundwater Management Contingency Plan (SGMCP) has been developed to provide guidance for possible future site development work conducted at the Eureka City Schools Bus Yard, located at 642 West 14th Street in the City of Eureka, California (Figure 1).

Following site investigation and monitoring activities, low concentrations of soil and groundwater contamination remain in place in the vicinity the former Underground Storage Tank (UST). The Humboldt County Division of Environmental Health (HCDEH) and the California Regional Water Quality Control Board, North Coast Region (RWQCB) have determined that the threat to groundwater quality from the unauthorized release of petroleum hydrocarbons is minimal.

As a result of the residual petroleum hydrocarbon contamination remaining in place below the site, HCDEH requested the submittal of a SGMCP to address the worker safety issues, and to address the characterization, handling, and disposal of contaminated soil and groundwater encountered during any future site development activities.

1.2 Site History

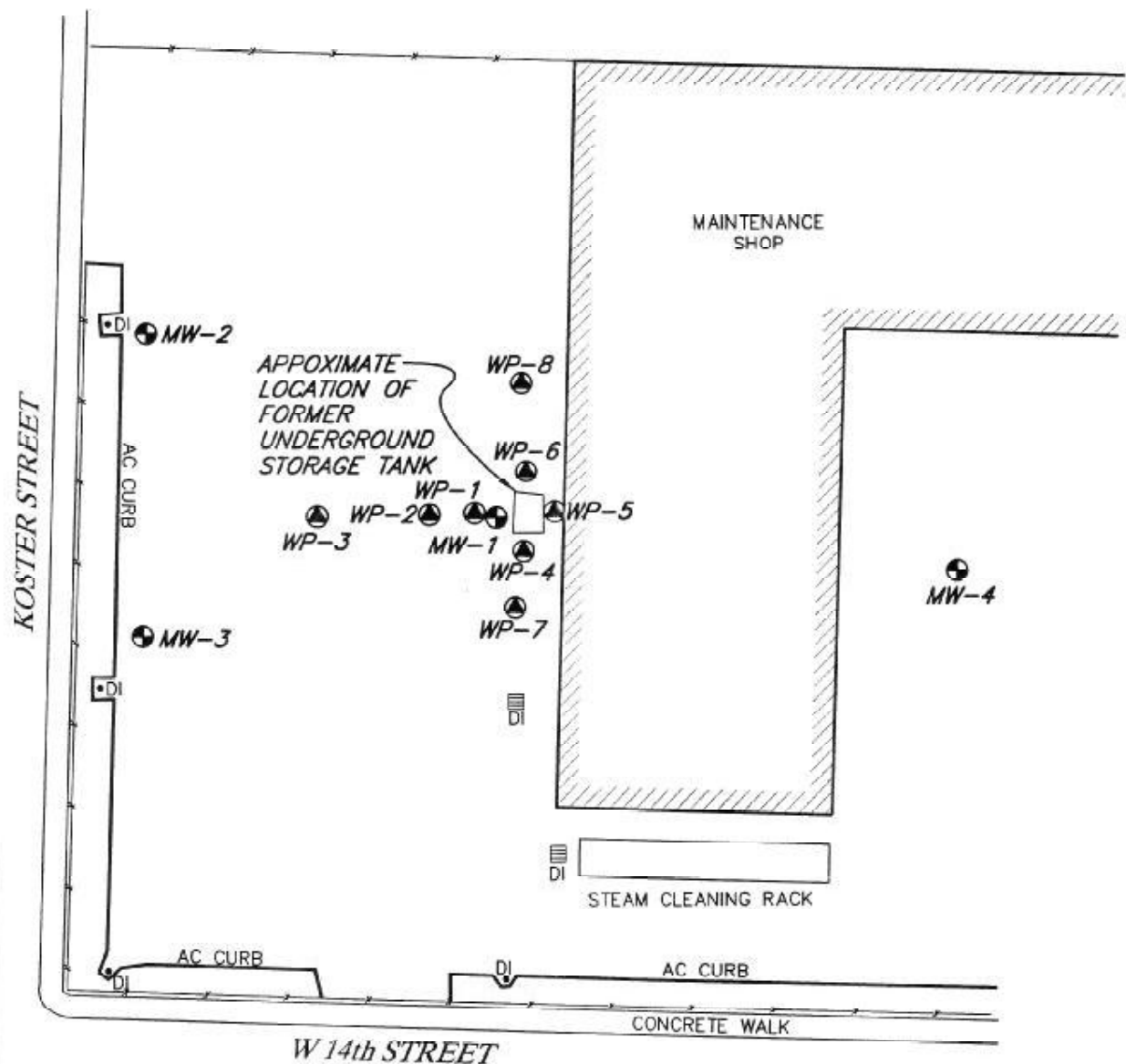
This section summarizes previous site activities. A detailed description of previous activities, including laboratory analytical data for soil and groundwater samples is included in the “Fourth Quarter 2004 Groundwater Monitoring Report and Request for Closure, Eureka City Schools Bus Yard, Eureka, California (Case No. 12649)” (SHN, 2005).

The Eureka City Schools Bus Yard previously contained a UST to store waste oil. A site map showing the former UST location is presented in Figure 2. The 550-gallon waste oil UST was installed in 1981, and subsequently removed in July 1997 under supervision of a representative from the HCDEH. Inspection of the tank’s physical condition at the time of removal identified the presence of corrosion, and impacts to soil and groundwater were observed in the UST excavation area at the time of removal. Approximately 25 cubic yard of petroleum-impacted soil was removed during overexcavation of the UST location.

Soil samples collected on August 1, 1997 from the UST excavation area indicated the presence of Oil and Grease (O&G), Total Petroleum Hydrocarbons as Diesel (TPHD), and Gasoline (TPHG). Based on the conditions observed at the time of the UST removal, and the soil sample results, an Unauthorized Release Report was filed with the HCDEH for the UST formerly located at the Eureka City Schools Bus Yard. Historic site analytical data is presented in Appendix A.

An initial site investigation was conducted at the site in August 1998 to assess the impact of contamination in soil and groundwater in the area surrounding the former UST location. The initial site investigation consisted of the installation of eight exploratory soil borings/well points for the collection of soil and groundwater samples (WP-1 through WP-8, Figure 2). The soil and groundwater samples collected during the initial site investigation identified TPHD and Total Petroleum Hydrocarbons as Motor Oil (TPHMO) at several boring locations. TPHG and Methyl Tertiary-Butyl Ether (MTBE) did not appear to be significant contaminants at the site.





EXPLANATION

● MONITORING WELL LOCATION
MW-1 AND DESIGNATION

● WELL POINT LOCATION
WP-1 AND DESIGNATION

SH
Consulting Engineers
& Geologists, Inc.

Eureka City Schools
Corporation Yard Bus Garage
624 W. 14th St., Eureka, Ca.

MAY 2004

098073-SITE-04

Site Plan

SHN 098073

Figure 2

In March 2004, SHN supervised the installation of four groundwater-monitoring wells at the site for the implementation of a groundwater-monitoring program (MW-1 through MW-4, Figure 2). For each well location, a soil boring was extended to a depth of 15 feet Below Ground Surface (BGS) utilizing a hollow-stem auger rig, and subsequently converted into a groundwater monitoring well. The groundwater monitoring wells were all screened from a depth of 5 to 15 feet BGS.

The groundwater-monitoring program for the site was implemented on March 18, 2004 utilizing the four groundwater-monitoring wells at the site. Quarterly groundwater monitoring was completed at the site for one hydraulic cycle (one year) as requested by the HCDEH. The site monitoring wells were destroyed on July 25, 2005, by overdrilling each location with a hollow-stem auger drill rig. The borings were backfilled with cement and completed at grade to match existing surface conditions.

2.0 Contingency Plan

This SGMCP is required to minimize the threat of exposure to workers, with regard to the documented residual petroleum hydrocarbon contamination left in place; and to outline the necessary actions to be taken in the event that contaminated soil and/or groundwater is encountered during site development activities. Additionally, a Site Safety Plan (SSP) has been included as Appendix B.

2.1 Locations of Known Contamination

Residual soil and/or groundwater contamination is known to exist near the former UST location, (well MW-1) and well MW-4. A site map showing the most recent concentrations of known groundwater contamination at the site is presented as Figure 3. Groundwater depth across the site varies from approximately 4 to 6 feet BGS throughout the year and flows west toward Koster Street.

2.2 Type and Magnitude of Known Contamination

TPHD concentrations in groundwater from site monitoring wells are relatively low, and often below detection limits. TPHG, Benzene Toluene, Ethylbenzene, and Xylenes (BTEX), and Volatile Organic Compounds (VOCs) in groundwater have not been detected above reporting limits in any site monitoring wells. Historic groundwater data for site-monitoring wells are contained in Appendix A, Table A-1.

Groundwater samples collected from well points completed during the August 1998 site investigation detected TPHD and TPHMO in the area of the former tank location. TPHD levels in groundwater ranged from 140 micrograms per liter (ug/L) in well point WP-7, to 300 ug/L in well point WP-2. TPHMO levels in groundwater ranged from 690 ug/L in well point WP-8 to 1,600 ug/L in well point WP-2. Groundwater data for the August 1998 well point sampling are contained in Appendix A, Table A-2.

Soil samples collected from the excavation sidewalls during tank removal activities contained the highest level of TPHD and TPHMO observed at the site. TPHD levels in soil samples from the excavation area ranged from 4 micrograms per gram (ug/g) to 520 ug/g, and TPHMO levels ranged from 180 ug/g to 3,150 ug/g. TPHG was detected in one soil sample collected from the

excavation area at a concentration of 190 ug/g. Soil samples collected from soil borings completed during the August 1998 site investigation were not analyzed for TPHD and TPHMO; however, no BTEX components were detected above laboratory detection limits in any soil samples and TPHG was identified in one soil sample at a concentration of 2.1 ug/g. Soil sample analytical results for the UST excavation area and initial site investigation are contained in Appendix A, Table A-3.

Soil samples collected during drilling activities for the installation of site monitoring wells in March 2004 contained detectable concentrations of TPHD and TPHMO. TPHD was present in the soil samples collected from boring locations MW-1, MW-2, and MW-4 at concentrations of 73, 7.3, and 9.7 ug/g respectively. TPHMO was present in soil samples from MW-1, MW-2, and MW-4 at concentrations of 660, 83, and 170 ug/g respectively. The soil samples collected from soil boring MW-3 contained no detectable concentrations of TPHD or TPHMO.

Soil samples collected from boring locations MW-1 and MW-4 were additionally analyzed for TPHD and TPHMO after employing a silica gel cleanup to remove any naturally occurring hydrocarbons. In both cases, the results for TPHD and TPHMO were lower in the silica gel-cleanup samples, suggesting that naturally occurring hydrocarbons are present, along with low levels of petroleum hydrocarbons. Analytical results for the soil samples collected from well boring locations in March 2005 are contained in Appendix A, Table A-4.

With few exceptions, concentrations of both TPHD and TPHMO were highest in the 3- to 4-foot depth samples, and declined rapidly between 4 and 8 feet Below Ground Surface (BGS). TPHD and TPHMO concentrations were generally less than the detection limit below 10 feet BGS.

2.3 Chemical Characteristics and Toxicological Information of Known Contamination

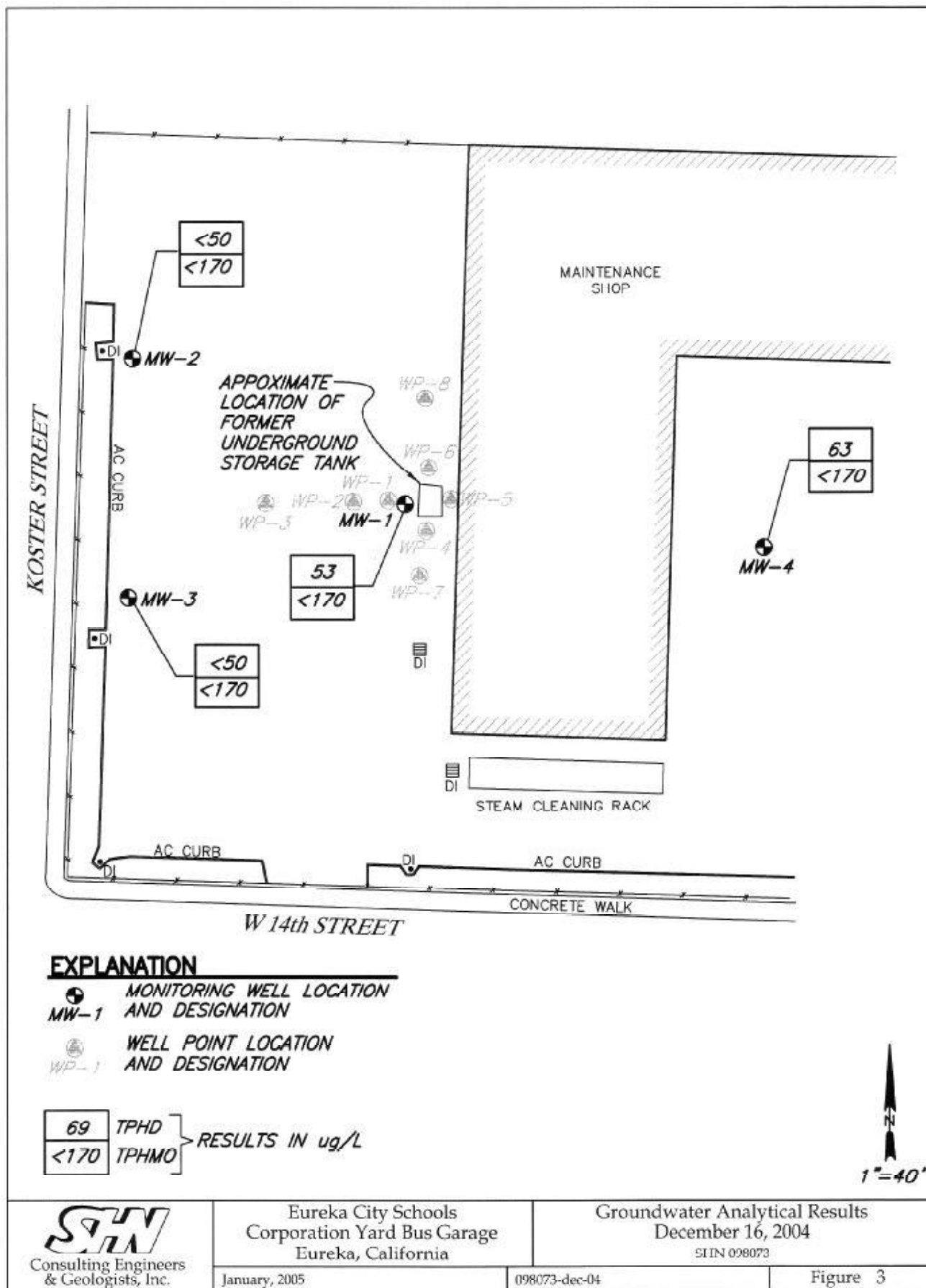
Chemical characteristics and toxicological information of the known contaminants present at the site are discussed in the SSP presented in Appendix B.

2.4 Notifications to be Performed Before Working in Contaminated Areas

Prior to conducting any subsurface work in the site area, the owner of the property will provide the contractor with this document. The contractor's site supervisor will read this document and become familiar with the potential hazards associated with working in contaminated soil areas of the site. The site supervisor will conduct a site meeting with all personnel that have the potential of coming in contact with contaminated soil and/or groundwater, at which time he/she will instruct them on the appropriate actions to be taken in the event that subsurface contamination is encountered. Each project worker will receive and read a copy of this document, and will sign a statement as to such before entering the work site. A copy of this document will be kept with the owner or contractor at the site during construction activities that involve excavation and/or trenching.

2.5 Actions to be Taken Before Working in Contaminated Areas

Prior to working in any subsurface area identified as being impacted by petroleum hydrocarbons, workers will review this document and familiarize themselves with the necessary actions to be taken in the event that contamination is encountered. If there are any uncertainties of the actions to be taken, the worker will consult the site supervisor.



2.6 Actions to be Taken Upon Encountering Contaminated Material

If contaminated material is encountered, the site supervisor will be notified. The site supervisor will then determine if the workers have adequate training and proper protective equipment to continue working in the area. Work will not resume until properly trained and equipped workers are present. A hazard analysis must be performed in accordance with the SSP to determine the appropriate level of personnel protection.

2.7 How to Properly Handle and Dispose of Contaminated Material

At a minimum, each worker that may come into contact with contaminated material will use Level D protection at all times. This includes chemical resistant gloves, eye protection, a hardhat, and steel-toed boots.

Any contaminated soil that is encountered and requires removal, such as soil removed during trenching activities, will be moved to a secure area of the site that is away from routine traffic and is high enough that water will not pond on or around the soil. The soil will be placed on and covered with 6-mil plastic (Visqueen®), in such a way that the soil pile is protected from water run-on and run-off. Soil samples will be collected for laboratory analysis from the stockpile utilizing laboratory-supplied containers. The samples will be analyzed for TPHD, TPHMO, TPHG; and Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX). The analytical results of the soil stockpile sample will be used to determine the proper handling and disposal method for the soil. In the event that the soil requires off site disposal, a contractor licensed to transport such material will be utilized to transport the contaminated soil to a facility that is licensed to accept such soil. All contaminated soil shall be removed from the site within 90 days, as required.

Any contaminated groundwater that is encountered and requires removal, such as dewatering during trenching activities, will be removed from the excavation area and contained on the site for temporary storage

Water samples will be collected for laboratory analysis from the stored water utilizing laboratory-supplied containers. The samples will be analyzed for TPHD, TPHMO, TPHG; and BTEX. The analytical results of the groundwater sample will be used to determine the proper handling and disposal method for the water. In the event that the water requires treatment and off site disposal, a contractor licensed to handle such material will be utilized for treatment and disposal activities to a facility that is licensed to accept such material.

2.8 Construction Practices to Minimize the Disruption and Potential for Transport of Contaminated Material

Prior to beginning construction in areas where trenching or other earthwork is to be performed, the site map that delineates areas of contamination will be reviewed. If possible, work in potential contaminated areas will be moved so as to minimize the disturbance or removal of contaminated material. If work in contaminated zones cannot be avoided, work will be conducted to minimize the removal of contaminated material. If trenches extend into the shallow groundwater, cement cofferdams will be placed in the trench backfill to minimize the potential for utility trenches to act as a preferential pathway. All contaminated material will be handled in accordance with the guidelines presented in Section 2.7.

3.0 References

- California Environmental Protection Agency. (August 2003). *A Compilation of Water Quality Goals*. Regional Water Quality Control Board, Central Valley Region.
- SHN Consulting Engineers & Geologists, Inc. (October 1998). *Report of Phase II Investigation, Eureka City Schools Bus Garage, 642 West 14th Street, Eureka, California*. Eureka: SHN.
- . (May 1998). *Monitoring Well Installation Report of Findings, Eureka City Schools Bus Garage, 642 West 14th Street, Eureka, California*. Eureka: SHN.
- . (March 2005). *Fourth Quarter 2004 Groundwater Monitoring Report and Closure Request, Eureka City Schools Bus Garage, 642 West 14th Street, Eureka, California*. Eureka: SHN.

Table A-1
Historical Groundwater Analytical Results
Eureka City Schools, Eureka, California
(in ug/L)¹

Sample Location	Date	TPHD ²	TPHMO ²	TPHG ³	B ⁴	T ⁴	E ⁴	X ⁴	MTBE ⁵	VOCs ⁶	Cadmium ⁷	Chromium ⁷	Nickel ⁷	Zinc ⁷	Lead ⁸
MW-1	3/18/04	75	<170 ⁹	NA ¹⁰	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10/04	96	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/16/04	69	<170	<50	<1.0	<1.0	<1.0	<1.0	<1.0	ND ¹¹	<10	11	<20	50	<10
	12/16/04	53 ⁵	<170 ⁶	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	3/18/04	<50	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10/04	59	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/16/04	<50	<170	<50	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<10	<10	<20	29	<10
	12/16/04	<50	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	3/18/04	52	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10/04	70	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/16/04	<50	<170	<50	<1.0	<1.0	<1.0	<1.0	<1.0	ND	<10	<10	<20	27	<10
	12/16/04	<50	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	3/18/04	68	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10/04	200	230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/16/04	<50	<170	<50	<1.0	<1.0	<1.0	<1.0	3.7	ND	<10	<10	<20	<20	<10
	12/16/04	63	<170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1. ug/L: micrograms per Liter
2. Total Petroleum Hydrocarbons as Diesel (TPHD) and Motor Oil (TPHMO), analyzed in general accordance with EPA Method Nos. 3510/GCFID/8015B.
3. Total Petroleum Hydrocarbons as Gasoline (TPHG), analyzed in general accordance with EPA Method No. 8260B.
4. Benzene (B); Toluene (T); Ethylbenzene (E); and, total Xylenes (X), analyzed in general accordance with EPA Method Nos. 5030B/8260B.
5. Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method Nos. 5030B/8260B.
6. Volatile Organic Compounds (VOCs), analyzed in general accordance with EPA Method Nos. 5030B/8260B.
7. Analyzed in general accordance with EPA Method No. 200.7
8. Analyzed in general accordance with EPA Method No. 200.9
9. <: denotes a value that is "less than" the method detection limit
10. NA: Not Analyzed
11. ND: Not Detected (See laboratory analytical reports for individual constituents and associated method detection limits.)

Table A-2
Groundwater Laboratory Analytical Results to Date
Eureka School District Corporation Yard

Sample Location	Date Units:	TPH Gasoline ug/L ¹	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Total Xylenes ug/L	TPH Diesel ug/L	Oil & Grease mg/L ²	TPH Motor Oil ug/L	MTBE ug/L	TBA ug/L	Other EPA8260 ug/g ³	EPA 8010 ⁴ ug/L	EPA 8270/625 ⁵ ug/L	Lead (Pb) mg/L	Chromium (Cr) mg/L	Cadmium (Cd) mg/L	Nickel (Ni) mg/L	Zinc (Zn) mg/L
Tank Pit Water	7/21/97	200	0.43	<0.300 ⁶	0.61	3	380	25		3.4			2.5 cis-1,2-Dichloro-ethylene	<10	2	2.7	<0.01	2.9	4.9
Well Points:																			
WP-2	8/4/98	<50	<0.5	<0.5	<0.5	<0.5				<0.5	140	<2							
WP-2/3	8/7/98						300		1,600										
WP-4	8/4/98	<50	<0.5	<0.5	<0.5	<0.5	200		830	<0.5	<10	<2							
WP-5	8/4/98	<50	<0.5	<0.5	<0.5	<0.5	270		1,300	0.64	<10	<2							
WP-7	8/4/98	<50	<0.5	<0.5	<0.5	<0.5	140		660	<0.5	<10	<2							
WP-8	8/4/98	<50	<0.5	<0.5	<0.5	<0.5	230		640	<0.5	<10	<2							

1. ug/L: micrograms per Liter

2. mg/L: milligrams per Liter

3. ug/g: micrograms per gram

4. Only the constituents detected in the EPA 8010 scan are listed. For a complete list of constituents and reporting limits, see the laboratory reports.

5. Only the constituents detected in the EPA 8270 (for soil) or EPA 625 (for water) scan are listed. For a complete list of constituents and reporting limits, see the laboratory reports.

6. <: denotes a value that is "less than" the method detection limit.

Table A-3
Soils Laboratory Analytical Results to Date
Eureka School Corporation Yard

Sample Location	Date	TPH Gasoline ug/g ¹	Benzene ug/g	Toluene ug/g	Ethyl- benzene ug/g	Total Xylenes ug/g	TPH Diesel ug/g	Oil & Grease ug/g	TPH Motor Oil ug/g	MTB E ug/g	TBA ug/g	Other EPA8260 ug/g	EPA 8010 ² mg/kg ³	EPA 8270/625 ⁴ mg/kg	Lead (Pb) mg/kg	Chromium (Cr) mg/kg	Cadmium (Cd) mg/kg	Nickel (Ni) mg/kg	Zinc (Zn) mg/kg
During Tank Removal:																			
Tank Pit North	7/21/97	<1.0 ⁵	<0.005	<0.005	<0.005	<0.005	120 ⁶	1,370		<1			<0.005	<0.67	54	54	<1.0	45	92
Tank Pit South	7/21/97	<1.0	<0.005	<0.005	<0.005	<0.005	130 ⁶	1,140		<1			<0.005	<0.67	55	56	<1.0	45	87
Post-Overexcavation:																			
Tank Pit North Sidewall	8/1/97	<1.0	<0.005	<0.005	<0.005	<0.005	3.7 ⁶	180		<1			<0.005	<1.0	13	41	<1.0	34	40
Tank Pit South Sidewall	8/1/97	190 ⁷	<0.40 ⁸	<0.40 ⁸	<0.40 ⁸	<0.80 ⁸	520 ⁶	3,150		<20 ⁸			<0.3 ⁸	0.55 (2-ethylexyl-phthalate)	9	49	<1.0	34	81
Tank Pit East Sidewall	8/1/97	<1.0	<0.005	<0.005	<0.005	<0.005	41 ⁶	400		<1			<0.01	<2.0	21	28	<1.0	21	52
Tank Pit West Sidewall	8/1/97	<1.0	<0.005	<0.005	<0.005	<0.005	35 ⁶	950		<1			<0.005	<1.0	66	42	<1.0	30	34
Tank Pit Bottom	8/1/97	<1.0	<0.005	<0.005	<0.005	<0.005	120 ⁶	870		<1			<0.005	<3.0	21	38	<1.0	25	35
Well Points:																			
WP-1/3.5'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05		12 (phenol)					
WP-1/7.5'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-1/11'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-2/4.3'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-2/7.5'	8/4/98																		
WP-3/4.5'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05		7.1 (phenol)					
WP-3/8.5'	8/4/98																		
WP-4/4.5'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-4/7'	8/4/98																		
WP-5/4'	8/4/98	2.1	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-5/8'	8/4/98																		
WP-6/4.5'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-6/8'	8/4/98																		
WP-6/12'	8/4/98																		
WP-7/4'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-7/9'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-8/4'	8/4/98	<1.0	<0.005	<0.005	<0.005	<0.005				<0.005	<0.5	<0.05							
WP-8/8'	8/4/98																		

1. ug/g: micrograms per gram

2. Only the constituents detected in the EPA 8010 scan are listed. For a complete list of constituents and reporting limits, see the laboratory reports.

3. mg/kg: milligrams per kilogram

4. Only the constituents detected in the EPA 8270 (for soil) or EPA 625 (for water) scan are listed. For a complete list of constituents and reporting limits, see the laboratory reports.

5. <: denotes a value that is "less than" the method detection limit.

6. Although the sample contained hydrocarbons within the reportable range for diesel, the chromatogram did not resemble either fresh or aged diesel.

7. The Method Reporting Limit (MRL) was raised due to matrix interference.

8. This sample contained hydrocarbons in the diesel range, which were quantified as gasoline.

Table A-4
Soil Analytical Results, March 12, 2004
Eureka City Schools, Eureka, California
(in ug/g) ¹

Sample Location	Sample Depth (feet BGS)²	TPHMO³	TPHMO w/ SGC⁴	TPHD³	TPHD w/ SGC
MW-1	4.5	660	200	73	19
MW-2	4.5	83	NA ⁵	7.3	NA
MW-3	4.0	<10 ⁶	NA	<1.0	NA
MW-4	5.0	170	100	9.7	14

1. ug/g: micrograms per gram
 2. BGS: Below Ground Surface
 3. Total Petroleum Hydrocarbons as Motor Oil (TPHMO) and as Diesel (TPHD) analyzed in general accordance with EPA Method No. 3550/GCFID.
 4. SGC: Silica Gel Cleanup.
 5. NA: Not Analyzed
 6. <: Denotes a laboratory value less than the method detection limit.

Site Safety Plan

Reference: 090012.600

General Information

Project:	<u>Eureka City Schools Bus Yard</u>	Site Address:	<u>642 W. 14th Street</u>
LOP Case No.	<u>12649</u>		<u>Eureka, CA</u>
Site Phone:	<u>(707) 441-2503</u>	Date:	<u>August 2005</u>
Plan Prepared by:	<u>SHN Consulting Engineers & Geologists, Inc.</u>		

Key Personnel and Responsibilities (to be filled in prior to construction)

	Name	Telephone Number
Project Manager:	_____	_____
Site Supervisor:	_____	_____
Site Safety Officer:	_____	_____
Field Personnel:	_____	_____

1.0 Introduction

This Site Safety Plan (SSP) establishes general health and safety requirements for limiting personal exposure to potentially hazardous materials. The intent of this SSP is to provide health and safety guidelines for the personal protection of contractor or subcontractor employees related to hazardous materials operations at the site. The application of this SSP is limited to the intrusive activities below the ground surface at the subject site. The soils are known to contain residual contamination of these materials:

- Total Petroleum Hydrocarbons as Diesel (TPHD)
- Total Petroleum Hydrocarbons as Motor Oil (TPHMO)

This SSP shall be implemented immediately upon detection or suspected presence of any of the above contaminants. All site personnel and visitors must read this SSP prior to entering the contamination reduction zone or exclusion zone.

California Division of Occupational Safety and Health (referred to as Cal/OSHA) requirements involving the operation of heavy equipment and working in or near excavations and trenches will be followed at all times. It is not a focus of this SSP to provide safety guidelines for general construction activities, excavation activities, or heavy equipment operations.

2.0 Hazard Analysis

2.1 Site/Hazard Overview

Apparent Hazard	Type of Facility	Status of Facility
<input type="checkbox"/> Serious	<input type="checkbox"/> Impoundment	<input checked="" type="checkbox"/> Active
<input type="checkbox"/> Moderate	<input type="checkbox"/> Landfill	<input type="checkbox"/> Inactive
<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Open	<input type="checkbox"/> Unknown
<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other School Bus Yard and Maintenance Area	

Waste Type(s)	Waste Characteristics	Type/Form of Hazard
<input type="checkbox"/> Gas	<input checked="" type="checkbox"/> Toxic	<input checked="" type="checkbox"/> Dust
<input checked="" type="checkbox"/> Liquid	<input type="checkbox"/> Corrosive	<input checked="" type="checkbox"/> Liquid (in GW)
<input type="checkbox"/> Sludge	<input checked="" type="checkbox"/> Ignitable	<input type="checkbox"/> Fumes
<input checked="" type="checkbox"/> Solid	<input checked="" type="checkbox"/> Volatile	<input checked="" type="checkbox"/> Vapors
<input type="checkbox"/> Unknown	<input type="checkbox"/> Radioactive	<input checked="" type="checkbox"/> Contact
<input type="checkbox"/> Other	<input type="checkbox"/> Reactive	<input type="checkbox"/> Respiratory
	<input type="checkbox"/> Unknown	<input checked="" type="checkbox"/> Particulates
	<input type="checkbox"/> Other	<input type="checkbox"/> IDLH

2.2 Chemical Hazards

The chemical hazards at this site include possible exposure to petroleum products and related chemicals. Table B-1 contains a summary of physical and toxicological data for various substances known at the project site. Table B-2 contains a summary of the exposure routes to humans, and resulting symptoms stemming from petroleum hydrocarbon and related chemical exposures. The published material referenced for these tables represent industry standards and includes current information from the National Institute for Occupational Safety and Health (NIOSH) *Pocket Guide to Chemical Hazards*, and American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values and Biological Exposure Indices," and other sources such as databases from the National Library of Medicine.

Exposure to these chemical hazards can take place in the form of direct contact with the contaminated soils and/or groundwater, or inhalation of air in the vicinity of subsurface activities such as excavation, grading, or digging. The air from disturbed soil may contain dispersed chemicals as vapors, fumes, or mists, and dusts to which the chemicals adhere.

Have all contaminants that may be present on site been identified?

Yes ☒ No ☐ Unknown ☐

**Table B-1
Toxicological and Physical Data**

Chemical	PEL/TLV ¹ (ppm) ²	Vapor Pressure (mm Hg) ³	Boiling Point (F°)	Solubility	Vapor Density (air=1)	Specific Gravity (water=1)	Flash Point (F°)	Melting Point (F°)	Hazard Type (V)	Exposure Route (W)	Acute Effects (X)	Chronic Effects (Y)
Diesel Fuel (as vapor and aerosol)	100 mg/m ³ (~13 ppm)	<1 ¹⁰	370	<0.1%	>1 ¹¹	0.87	140 UEL=7%	MP=Not Listed LEL=0.9%	c, d, g	h, i, k	a, b, f, h, i, k, m, r	c, g, h
Motor Oil	None established	<0.1	>550	Negligible	Not Listed	0.87-0.89	410-432 UEL=N/A	-10 LEL=N/A	None apply	h, i, k	n (heated), o	c
(V) Type of Hazard Property							(W) Route of Exposure					
a - corrosive b - flammable c - toxic d - volatile							e - reactive f - radioactive g - carcinogenic h - infectious h - skin and/or eye contact i - inhalation j - skin absorption k - ingestion					
(X) Acute Effects	a - abdominal pain b - central nervous system / depression c - comatose d - convulsions e - confusion f - dizziness			g - diarrhea h - drowsiness i - eye irritation j - fever k - headache m - nausea			n - respiratory system irritation o - skin irritation p - tremors q - unconsciousness r - vomiting s - weakness			t - staggering gait u - dilated pupils v - muscle fatigue w - insomnia x - sweating y - mental impairment		
(Y) Chronic Effects	a - central nervous system b - blood c - skin d - bone marrow			e - eyes f - respiratory system g - liver			h - kidneys i - gastrointestinal tract j - fetal defects			k - carcinogen l - suspected carcinogen m - cardio vascular system		
1. PEL/TLV: Permissible Exposure Limit/ Threshold Limit Value 2. ppm: parts per million 3. mm Hg: millimeters of Mercury 4. mg/m ³ : milligrams per cubic meter 5. UEL: Upper Exposure Limit 6. LEL: Lower Exposure Limit 7. STEL: Short-Term Exposure Limit 8. Exposure by all routes should be carefully controlled to levels as low as possible 9. N/A: Not Applicable 10. <: denotes a value less than the number listed 11. >: denotes a value greater than the number listed 12. HC: Hydrocarbons												
* The lower of the PEL (Permissible Exposure Limit) or TLV (Threshold Limit Value) was selected. The PEL or TLV (apart from the STEL or Ceiling) represents an 8 -hour Time-Weighted Average. STEL means Short-Term Exposure Limit and is a 15-minute average occurring no more than four times a day. The Ceiling is not to be exceeded during any part of the day and is considered an instantaneous exposure. The designation (skin) in the PEL/TLV column refers to the potentially signi ficant exposure that can come from contact of the substance with the skin.												

Table B-2 Exposure Routes and Symptoms		
Substance	Exposure Route	Exposure Symptoms
Diesel Fuel	Inhalation* Ingestion Skin and/or Eye Contact*	Acute Exposure: headache, slight giddiness, nausea, vomiting, cramping, depression of central nervous system, pulmonary irritation, dermatitis, plugging of skin follicles. Chronic Exposure: delayed kidney and liver damage.
Motor Oil	Inhalation Skin and/or Eye Contact* Ingestion	Acute Exposure: vapors from oil at high temperatures may cause mild irritation of the nose, throat, and respiratory tract. Mild irritation of eyes. Minimally irritating to skin. Ingested oil is slightly toxic. Chronic Exposure: defatting and drying of the skin that may cause various skin disorders such as dermatitis, folliculitis or oil acne.
* Primary exposure route(s)		

3.0 Monitoring Plan

On-site air and personnel monitoring shall be conducted, as required by Federal or State health and safety regulations, or if conditions indicate. Monitoring will be conducted and documented by the Site Safety Officer (SSO). On-site air and personnel monitoring shall also be conducted at the start of each new activity, to characterize the type and degree of chemical exposure from each of the suspected major contaminants for each specific operation, and to determine site control areas according to Table B-3. A photoionization detector (PID) will be used to measure volatile compounds in the air.

<p align="center">Table B-3 Occupational Health Monitoring for All Tasks</p>			
Parameter	Location and Interval	Response Level	Response
Hydrocarbons (Total by PID)	Breathing zone of workers subject to highest exposure, every 30 minutes during intrusive work or contaminated soil handling and at every new work location	<50 ppm above background reading	Continue Level D/D modified work and continue monitoring
Hydrocarbons (Total by PID)	Breathing zone of workers subject to highest exposure, every 15 minutes during intrusive work or contaminated soil handling and at every new work location	50-75 ppm above background reading for longer than 2 minutes	Continue Level D/D modified work and continue monitoring
Hydrocarbons (Total by PID)	Breathing zone of workers subject to highest exposure every 10 minutes during intrusive work or contaminated soil handling and at every new work location	75-100 ppm above background reading for longer than 2 minutes	Back away from the source and allow the air to clear. If it does not decrease below 50 ppm, contact SSO & upgrade PPE to Level C with organic vapor cartridge
Hydrocarbons (Total by PID)	Periodically enter area in Level C to monitor if readings have dropped below 75 ppm above background	>100 ppm above background reading for longer than 2 minutes	Cease work, exit the project site and contact SSO, SS, and an Industrial Hygienist

4.0 Personal Protective Equipment (PPE)

Level of Protection: A___ B___ C___ D Modified X D X

Level C

- Full-face respirator equipped with NIOSH-approved organic vapor cartridges
- Chemically-resistant steel toe and reinforced shank boots or leather steel toe and reinforced shank boots protected with boot covers
- Chemically-resistant gloves (nitrile) of at least 10-mil thickness
- Chemical splash goggles (if a half-face respirator is utilized)
- Hard hat with any operating equipment, hazards over shoulder height hazard, or at construction sites
- Safety vests - when there is potential to be in the vicinity of moving equipment

Level D (Modified)

- Chemically-resistant steel toe and reinforced shank boots or leather steel toe and reinforced shank boots protected with boot covers
- Chemically-resistant gloves (nitrile), where work warrants
- Safety glasses (or chemical splash goggles, if warranted)
- Hard hat with any operating equipment, hazards over shoulder height hazard, or at construction sites
- Safety vests - when there is potential to be in the vicinity of moving equipment

Level D

- Leather steel toe and reinforced shank boots
- Leather gloves, where work warrants
- Safety glasses
- Hard hat with any operating equipment, hazards over shoulder height hazard, or at construction sites
- Safety vests - when there is potential to be in the vicinity of moving equipment

If organic vapor detection with the PID reaches 100 ppm or greater and is sustained above 100 ppm, respirators and other associated Level C PPE will be donned. Respirators will be removed in areas where it is determined to be safe by the SSO.

Respirators will be used, if warranted by site conditions, in order to minimize exposure to volatile organic chemicals by inhalation. Full-face respirators may also be used, to minimize vapor contact with the eyes. A full-face respirator also provides a higher level of respiratory protection than a half-face respirator. Organic vapor/HEPA (P100) cartridges will be utilized, and new cartridges will be installed, at a minimum, on a daily basis, or when vapor breakthrough has occurred. To prevent exposure to particulates (dust, mists, or fumes) and to extend the usability of the organic vapor cartridges, HEPA (P100) filters will be used, if warranted by site conditions. All respirators and cartridges will be NIOSH-approved.

Boots, gloves, and protective clothing will be used to prevent direct contact with potential contaminants in the soil and ambient air, and to provide a simple method of personal decontamination after fieldwork has been completed.

Splash goggles or safety glasses will be utilized to provide protection for the eyes, as specified above. All employees and subcontractors will meet the minimum level of PPE when entering or working in an area of known contamination specific to the job task. If the level of contamination is uncertain, the maximum level of PPE will be donned prior to entering the suspected contamination zone. Once appropriate site monitoring has been conducted to determine the level of contamination present, the level of PPE may be reduced, as appropriate. If known or suspected conditions require an increase in PPE level in the contamination zones or newly-designated contamination zones, all field activities will immediately cease until appropriate changes in PPE are made.

5.0 Site Control

Whenever feasible, personnel, equipment, and decontamination station placement shall be upwind of any suspected source of contamination. During site activities, the area will be divided into three basic areas: an exclusion zone (contaminated), a contamination reduction zone, and an uncontaminated zone. The uncontaminated zone will be the area(s) of the project that can be documented as not indicating any detectable levels of contamination by the selected methods of site monitoring presented in this SSP and has no visible or suspected contamination.

No person shall be allowed in an area designated as an exclusion zone or contamination reduction zone unless authorized by the SSO. Any person entering areas other than uncontaminated zones must comply with the PPE provisions of this plan.

If the site control portions of this SSP are not properly followed, the SSO will first consult with the Site Supervisor to correct the issue. If site controls are still unsatisfactory, the SSO will, secondly, stop field activities.

6.0 Decontamination Procedures

6.1 Decontamination Areas

Decontamination areas will be established prior to the commencement of site operations in contamination reduction zones or uncontaminated zones. Decontamination areas may be reestablished in response to changes in environmental conditions and site activities by the SSO.

6.2 Equipment Decontamination

All equipment will be appropriately decontaminated before leaving the work area. All non-disposable PPE will be appropriately decontaminated before leaving the site. Wash rinseate will be placed in a container and properly disposed. Used, disposable PPE will be contained in a separate container. It is anticipated that, for this project, normal disposal will be suitable for disposable PPE. Where soil tests are taken and results indicate site contamination at levels designated as hazardous waste by State or Federal regulations, the disposable clothing will be tested to determine the appropriate method of disposal.

Decontamination of personnel will be accomplished by removing contaminated clothing and gear, washing exposed skin with a solution of deionized water and Liquinox®, and rinsing with deionized water.

6.3 Emergency Decontamination

The decision whether or not to decontaminate a victim is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving treatment. If decontamination does not interfere with essential treatment, it should be performed.

- If decontamination can be done:
Wash, rinse, and/or cut off protective clothing and equipment.

- If decontamination cannot be done:
Wrap the victim in blankets, plastic, or rubber to reduce contamination of other personnel. Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures if necessary. Send along site personnel familiar with the incident.

If immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. If decontamination can be performed without interfering with essential life-saving techniques or first aid, or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe injury or loss of life, decontamination must be performed immediately. If an emergency due to a heat-related illness develops, protective clothing should be removed from the victim as soon as possible to reduce the heat stress.

7.0 General Safety Requirements

The following general safety procedures shall be followed by all persons entering and/or working in the immediate area of project activities:

1. All personnel involved with these activities shall be aware of the location of buried utilities. USA Underground Alert shall be notified, if required, at least 48 hours in advance of underground work and will mark and locate any underground utilities located within or immediately adjacent to the work area.
2. No site or subcontractor personnel will be allowed on site without the prior knowledge and consent of the SSO.
3. No field activities will be conducted under unsafe or questionable conditions. For example in higher hazard work situations, two persons, at a minimum must be present at the site while field activities are in progress.
4. All personnel involved with the project shall bring to the attention of the SSO or project representative any unsafe condition or practice associated with site activities.
5. Team members must avoid unnecessary contamination (such as, walking through known or suspected contaminated soil or puddles, kneeling or sitting on the ground, leaning against potentially contaminated equipment).
6. Respiratory devices may not be worn with beards or under other conditions that prevent a proper seal.
7. Respiratory devices may be worn with contact lenses.
8. No deep test pit entry (more than 5 feet in depth) will be allowed without installation of trench shoring, or other approved means of excavation security designed and installed in conformance with current Cal OSHA/OSHA regulations.
9. Smoking will only be allowed in designated areas.
10. Hard hats will be worn at all times where over-the-shoulder hazards are present.
11. Proper hearing protection will be worn at all times in conformance with current Cal OSHA regulations.
12. Proper eye protection will be worn to protect the eye area from liquid splashes or flying debris.

8.0 Emergency Response Plan

The SSO shall be immediately notified of any injury or accident occurring at this site. Figure 1 is a map showing the route from the site to the closest hospital.

8.1 Emergency Response Contacts

<u>Medical Facility</u>	<u>Phone #</u>
Emergency Medical Facilities: St. Joseph's Hospital (open 24 hours every day) 2700 Dolbeer, Eureka, CA	911 (707) 445-8121
Ambulance	911
Police	911 or (707) 441-4044
Fire Department	911 or (707) 441-4044
California Highway Patrol	911 or (707) 822-5981
Poison Control Hotline	(800) 222-1222 or 876-4766

In the event of an emergency, the following agencies and persons shall be appropriately notified immediately following the necessary emergency response contacts:

8.2 Government Contacts

In the event of an unauthorized release of potentially hazardous materials, the following agencies will be notified.

<u>Contact</u>	<u>Phone #</u>
California Regional Water Quality, Control Board, North Coast Region	(707) 576-2220
State Office of Emergency Services	(800) 852-7550
Humboldt County Division of Environmental Health	(707) 445-6215

8.3 On-Site Documentation

Compliance with the Site Safety Plan will be documented by execution of a sign-off sheet during the site safety briefing(s) and a daily record. By signing these sheets, each person to be involved in the project field activities acknowledges willingness to comply with this SSP throughout the period of the current field activities. Safety meetings will be scheduled at the beginning of field operations, and will be held at the start of each day. Field monitoring results will be recorded and retained on site.

**Hazardous Materials Site Operations
Daily Record/ Site Safety Meeting Attendance**

Job Name:		Activity:		Job #:				
Company/Agency	Employee's Name (If you have read this SSP, indicate with <u>check mark</u> after name)	Operation/ Function	Signature (If you attended the safety meeting for this site on this date, indicate with Y after signature)	Time In	Time Out	Date	Hazardous Waste Site Training	
							40 hr Y/N	24 hr Y/N


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Use the print feature in your browser to print this page.

**642 W 14th St
Eureka, CA 95501-0146**
to
**2700 Dolbeer St
Eureka, CA 95501-4736**

**Find it in the 2005 Road Atlas**

Eureka, CA

- page 12, grid section ND-2
- page 12, grid section ND-1

Estimated Total Driving Time:
6 minutes

Estimated Total Driving Distance:
3 miles

Total Number of Steps:
6

Step	Directions	Distance
1	You are at 642 W 14th St, Eureka, CA.	
2	Go E on 14th St for 0.76 miles	0.8 miles
3	Turn right onto H St	1 miles
4	Turn left onto Harris St	1 miles
5	Turn left onto Dolbeer St	0.3 miles
6	You are at 2700 Dolbeer St, Eureka, CA	